Students' Perception of Informal Learning Spaces in an Academic Library; An Investigation into the Relationship Between Learning Behaviours and Space Design

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STUDENTS' PERCEPTION OF INFORMAL LEARNING SPACES IN AN ACADEMIC LIBRARY; AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN LEARNING BEHAVIOURS AND SPACE DESIGN

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Abstract

Academic libraries, newly recreating themselves as centres for learning on campus, are providing expanded informal learning spaces for their students. We often judge the spaces as successful because students use them. But we do not know how students perceive these spaces as learning spaces. Students come to the library to conduct intentional or self-regulated learning. How do the spaces they use for learning activities support their learning? Do students just use the spaces because they have no choice, adapting their learning activity to their surroundings? These are some of the questions addressed by a study of student learning behaviours in informal learning spaces within an academic library. The study was conducted in early 2016. Students were interviewed regarding their perception of the spaces that they use, in relation to the learning activities they needed to undertake. The goal of the study was to determine the features in open learning spaces that assist students in their learning. This paper reviews the design of the particular academic library in the study, presenting an overview of the research and discussing preliminary results. The paper focuses on a discussion of the students' perceptions of the relationship between their learning and design of the spaces they use.

Keywords: informal learning spaces, learning behaviours, self-regulated learning, space design

Introduction

The Taylor Family Digital Library (TFDL) opened in September 2011 as the main library at the University of Calgary. It is a six-story, 24000 ^{m2} building. The building offers a mix of seating and technology throughout providing an opportunity for individual work, as well as group work and social interaction, in spaces that are designated either quiet or conversation allowed. While many academic libraries have a defined space on a single floor which includes space for informal learning, often labelled an Information or Learning Commons, the TFDL features well-designed informal learning spaces deliberately located throughout the six floors of the building. The result is the distribution of a variety of learning spaces well used by students.

Almost five years after its opening, the TFDL is a popular student space on campus. Students come to the library to socialize, relax, work in groups, complete their assignments, study and learn. There are an average of 10,000 daily visits during fall and winter terms, with 1.6 million visitors between April 1, 2015 and March 31, 2016. Student seating in the building numbers 1,950. The spaces are occupied by students working alone, beside others, or in groups of varying sizes, at tables (small or large, square or round, isolated or clumped); study carrels; quiet reading rooms or lounge-like open spaces; workstations or workrooms, to list but a few of the variety of spaces and features. It appears that the design of the TFDL is a success; the students make it a lively and active campus centre.

Background

While the visit data validates the success of the TFDL, and student commentary on the facility has been generally positive, there had not been any assessment of the effectiveness of the open

learning spaces from the combined view of design and learning. Bennett [2014, 2015] comments on the need for libraries to move beyond the planning of things in spaces to the planning for learning in spaces, acknowledging that while libraries are aware that learning takes place they know little about intentional learning and how spaces would better support learning.

Over the past ten years, learning space design has caught the attention of a number of architects, designers, academics and librarians. Design researchers [Boys, 2011, 2014; Boddington and Boys, 2011] have emphasized the need to investigate the design of higher education learning spaces to understand the learning environment as it relates to the emphasis on new types of learning in higher education. Keppell and Riddle [2013] discuss seven design principles focused on informal and collaborative spaces: comfort, aesthetics, flow, equity, blending, affordances and repurposing. They review a learning commons within an academic library from a design perspective. While the evaluation summarizes the effective implementation of the principles, they note that students need to recognize and perceive what the space has to offer in order for the space to be fully utilized. As Boys [2014] stated, " we need a better understanding of what matters about space for learning and the development of more diverse range of actual spaces in higher education …across …informal requirements…" (p.95). It appears that we have more to learn from our students than whether they like our spaces or not.

Interest in the types and definitions of student learning behaviours in the post-secondary environment is growing. Entwistle and Peterson [2004] in their study of student preferences for different kind of learning environments highlight the interrelationships between various learning concepts and the ways students react to various environments. They identify three approaches to learning and studying: deep, surface and strategic. Notably they talked about the behaviours of self-regulated study as a strategic approach where students put an effort into organized studying. This is similar to the definition of intentional learning that Bennett [2011] uses in his discussion of learning behaviours and learning spaces.

While there appears to be a relationship between intentional learning activities and choice of informal library spaces, the difficulty is in defining what that relationship is. In one recent attempt to study the relationship, May and Swabey [2015] conducted a multi-site observational study of five medium to small libraries in Canada. Seating sweeps resulted in quantifiable data that recorded what students were doing, while a survey questionnaire asked students why they chose a space and solicited their perceptions of the space. The authors conclude that there is a need for more research and a method to clearly demonstrate the link between libraries and learning. Searching for the link continues.

Self-regulated learning

Successful learners are successful students. Students who are successful learners tend to establish a process of learning that works for them. This process has been called self-regulation or intentional learning. Self-regulation has been described as being made up of processes that involve behavioral and environmental self-regulation. Zimmerman [2000] describes self-regulation as referring to "self-generated thoughts, feelings and actions that are planned and cyclically adapted to the attainment of personal goals" (p. 14). Zimmerman [1989] defines environmental self-regulation in relationship to the triadic process between the person, the behavior and the environment. He describes a process of self-regulation of the environment whereby a student would "arrange their room by eliminating noise, arranging lighting and arranging a place to write" (p. 330). In addition, he notes that through the student's environmental feedback loop which indicates that these arrangements are positively related to achieving learning goals, the student will either maintain these environmental assets or re-adjust to achieve their goal. The purpose of our study was to explore students' perception of the environmental assets in the TFDL and their learning in the TFDL environment as it relates to their self-regulated learning.

Research study

An earlier unobtrusive study of student learning behaviors in the TFDL in 2014 [Beatty, 2015], highlighted the diversity of learning activities students undertake in the library and concluded that students intentionally choose to conduct their learning in the library and also appear to deliberately chose specific spaces in the library to do so. The question became, then, does the space design in the library make a difference to their choice of space to learn? And, is it possible to determine which elements of the informal space appeal to the students, and why? Other studies suggest that one way to find out what students think of the learning spaces is to ask them. Thus, the present study based on interviewing students about their activities and perceptions of learning spaces in the TFDL was designed and implemented in winter 2016.

Methodology

A research study funded with a teaching and learning grant from the University of Calgary was undertaken in early 2016. This study was approved by the University of Calgary Conjoint Faculties Research Ethics Board. Twenty-one students were recruited using social media and digital and print posters in the library. The students were screened to ensure that they studied in the library regularly and to establish that they were registered students at the University of Calgary. All volunteers were given a $25 gift card at the end of the interview in recognition of their time. The semi-structured interview had a series of questions asking students to describe where, how and why they choose to learn in the library. They were also asked to review a series of 15 photos representing various informal learning spaces in the library, and to talk about their impressions of the spaces as they relate to their learning preferences and behaviours. The spaces were chosen to promote discussion on design and students were prompted to consider how the various affordances in the design might affect their choice of a learning space as it related to their own learning behaviours. Students were also asked how they learned and to consider generally how the library spaces assisted them in the learning activities that they undertook in the library. Each interview was conducted either by the primary investigator (PI) alone or with the assistance of the research assistant or by the research assistant with the PI in attendance. All interviews were recorded and later transcribed. Analysis of the interviews is being undertaken using NVivo software.

Results

Demographic data

A total of 21 participants were interviewed (11 female). Participants were from a variety of disciplinary backgrounds; 11 participants were students in science and engineering disciplines, and 10 participants were students in arts disciplines. Participants were mostly from undergraduate programs (20 participants), with 11 participants in second year or below, and 9 participants in third year or above. One participant was in a graduate program, and three had completed a previous degree.

How often do they come to the library and how long do they stay?

Students were asked to self-report on how often they come to the library and how long they stay to do their work. Study participants were frequent users. The majority of the students (n= 18) report coming to the library between 3 and 5 times per week. One student reported coming to the library more than once daily. Fourteen students reported staying from 1-3 hours at each visit, while 7 reported staying more than three hours per visit.

Rationale for choosing a space

Students reported that, for the most part, they had a preference for a particular floor and, more significantly, a particular area of that floor. There are various physical factors they reported being more likely to influence their choice of space. Environmental variables were mentioned most often, specifically sound level, with numbers of related comments about 2.5 times more often than lighting. Students mostly prefer quieter spaces, but there were some who thought some spaces would be too quiet and would prefer a space with noise or who would bring music to listen to while

they were studying, regardless if they were in a quiet or noisy space. While hard to control, ambient factors can contribute or take away from an atmosphere conducive to learning.

Looking for a space to study, students report that potential for distraction is an element in the decision making. Some wish to avoid distraction, while others report a need for distraction to either encourage concentration or serve as a mini-break while studying. Students would comment on distractions such as too many people, too much noise or too much traffic as a space that would not be a good place for them to learn. Several students (n=10) also commented on the feeling of openness. Openness seemed to be a determinant in matters of choice of space. Some students seemed to prefer open areas, which were defined as areas where there might be high ceilings with natural light, or not isolated or confined, while others would comment that a space was too open, with too many distractions. It seems that the choice of learning space is dependent on many factors. The same factor can a pro or con depending on the learner.

Other drivers for choice of space have to do with comfort level, furniture (types of tables and chairs) and outlets. By choosing the right space for their learning, many students would describe it was comfortable. The notion of comfort and being relaxed and therefore being in the right mood for learning is an element in their choice. Some noted that a space would be too comfortable and therefore not conducive to studying. Students recognize what works for them, and also what does not work for them.

There were some students who do not own a laptop, or do not always bring it to the university and rely on the library's desktop computers. However, one of the most frequent comments was the need for outlets. While not all students reported this need, for those who need an outlet, the location of the outlet would determine whether a table, carrel or other work space would be a best spot. However, for those who did use a laptop and the outlet was not working in their favored spot, they would still choose the spot by virtue of the other elements that they favored.

The advantage of having other learners around was noted by most, with a few however, preferring isolation. They commented that they could interact with friends to help with the learning or to have a mini-break, or be motivated by other people working and feel part of a learning community. They were aware once again of what atmosphere supported their learning and provided motivation to learn.

Tables with dividers, tables round or square, high or low, tables in groups or in more isolated areas as well as study carrels in small groups or large, all brought comment, either positive or negative depending on where they were situated. What is most apparent from the students' comments is that their best choice of flat work space had to be in combination with other elements (lighting, sound, distractions, people, openness, seating, outlets) in order for it to be effective.

Students commented quite frequently on the need for enough desk space and they were also aware when they did not have enough space and so modified their behaviours. Tables with dividers, workstations with dual monitors and large desk spaces, study carrels, or single tables with an obvious seating for one were remarked upon as being big enough for all their "stuff". And they bring a lot of stuff with them: backpacks, notebooks, text books, laptops or tablets, phones, lunch, water/coffee. If there was not enough space, e.g. a smaller workstation with no dividers, they were aware of it, and kept their stuff in their backpack until needed. This way of working, while seen as necessary in order to share common desktop spaces, was not seen to be preferred. They preferred spaces where "their space" was defined, either by dividers, low barriers or single seating tables.

What are they doing?

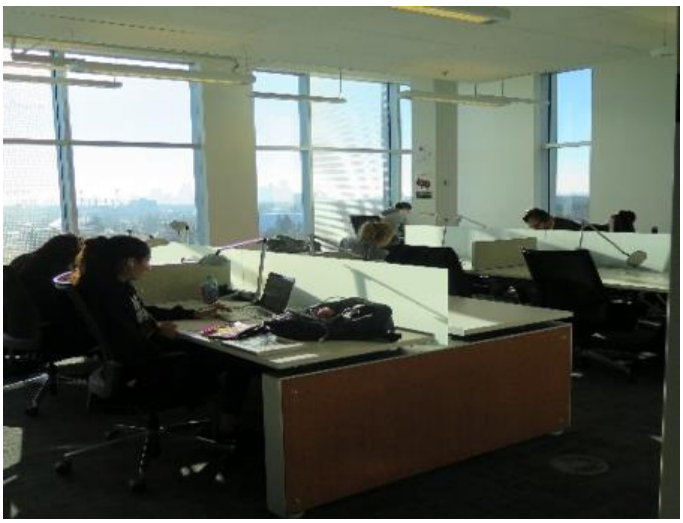
Students report many purposes in going to the TFDL. A previous unobtrusive observational study in the TFDL [Beatty 2015] reported on a variety of learning activities that the students confirmed in their interviews. Primary learning activities were noted as studying, reading, working on assignments, writing and note taking, mostly by themselves. While some noted that they did work in groups in the TFDL, their preferred mode of learning was alone, or among others, not necessarily in

a group. Other reasons for coming to the TFDL were to print, relax, use the computer, and to take a break.

While we had recruited students by looking for students who study in the TFDL, it is clear that while studying is the main purpose, they are able to manage their time to include other activities if desired or as part of their learning plan for the day.

Examples of spaces

The three figures below illustrate some of the informal learning spaces in the TFDL. Each of these spaces offers a variety of features that some find appealing and others do not. For example, in Figure 1 ,an area of the top floor of the TFDL in a secluded corner, with little traffic, a great view and separated desk spaces, students generally commented positively on the view and windows, but gave mixed opinions on the value of the presence of others.

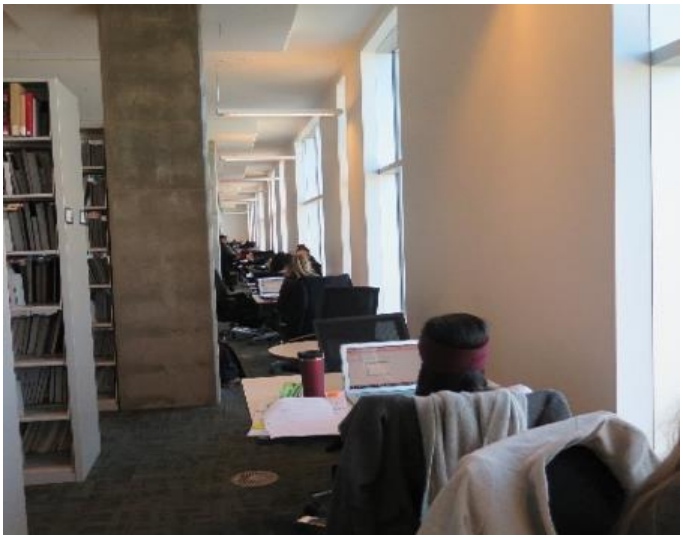


"you feel the sense of learning community"

"You might have people right in front of you…that's a little bit distracting"

Figure 1: TFDL sixth floor

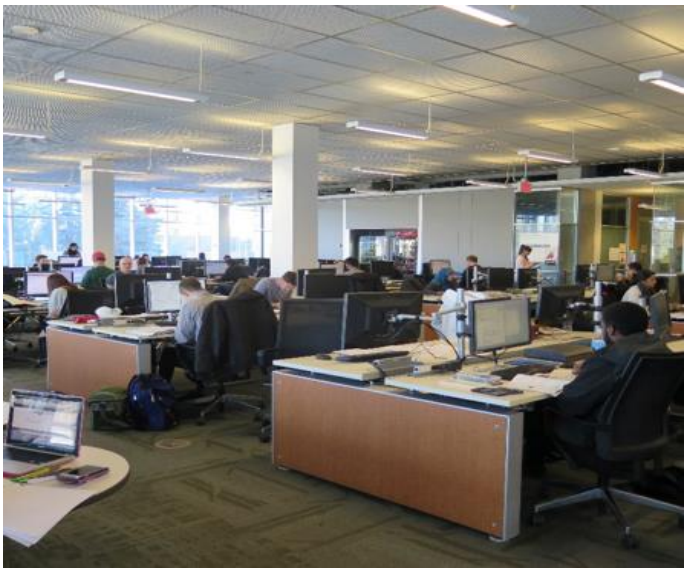
In Figure 2 below, an area on the fifth floor, with single tables situated between windows/walls and book shelves, most students found the view appealing, and the wall as a motivator for focus, but others found it too cramped, hot, and distracting. Figure 3 below, on the second floor, is typical of the computer workstations. Students generally recognize what they can do there and what they can't. While some will choose this place because it is obviously an open, social space, allowing for conversation and general group work, others recognize it might not provide the best environment for them primarily as a result of potential distractions within the space.



"it gives you a view… it's also close to the wall… it gives you a feeling of focus"

I'd be too busy trying to figure out what the people ahead of me are doing"

Figure 2: TFDL 5th floor



" you just run up the stairs, print it and head out"

"It just feels too busy to really sit down and focus on anything"

Figure 3: TFDL 2nd floor

Environmental self-regulation and learning behaviours in the TFDL

The purpose of this study was to find what relationships might exist between students' self-regulation of their environment in the TFDL and their learning. In other words, how do the students who use the TFDL to learn describe their relationship with the environment in the library? Does the environment affect their choice of space and the way they learn? The analysis of the interviews for determining this relationship is at an early stage. The spaces themselves were selected from six floors, they were either close to windows/light/view or not. They were in spaces from noisy to quiet,

from isolated to social, with open or closed aspects that could be deemed social or not, with a variety of seating. They were in proximity to high or low traffic areas and other ambient noise factors. The various representational spaces that were shown to the students elicited a variety of responses from “that is my spot’ to “I would never work there.” Further discussion would ensue in an effort to determine what elements resonated with the students. As noted above, students were able to identify the elements of the spaces and were then able to indicate whether it would be a space to their liking, and what they would do there.

We also wanted to determine how aware students are of the way they learn. When asked if they knew which ways of learning served them best, all of them had a definite awareness of how they learn. They generally acknowledged learning in a variety of ways ranging across auditory/verbal, visual and kinesthetic styles as illustrated by their preferences for reading, note-taking, paraphrasing, reviewing by diagramming or self-testing, watching videos, talking to oneself, making cue cards, teaching others, or practicing solutions. While no one activity stood out, it is clear that most of the participants preferred to study alone or only with others for short periods. Group work was acknowledged as something students had to do, but not something that participants generally preferred. How their learning preferences and choice of space are related will be the subject of the next phase of analysis.

They were also asked how they planned the day. For the most part, students are aware of their time constraints and their goals. An example of time constraint decision-making came from participant 20 (P20) who stated “It’s something that has a time crunch or something that I really need to absorb and I know I can’t afford to re-read this, I need to actually know it, then floor two or floor five or six are great.” P20 and others show an awareness of the type of surroundings needed in order to accomplish their goal. An example of overall learning preference for environment is from Participant 2 (P2) “ (I) like neutral colors, comfortable space, be big enough to accommodate my laptop, my notes, my backpack, a comfortable chair, good lighting. For me, primarily, would be a quiet area, that is very important.” When pressed to clarify why comfort was important, P2 replied “Comfortable is really key to learning because then you are relaxed and you’re able to actually focus on the work versus something else that is bothering you. So it helps with learning for sure. You don’t get distracted by things that are not very helpful in your learning.” Various participants mentioned comfort, mood and motivation as being primary to their choice of space. Participant 12 also cites an awareness of purpose and choice of space. “So for printing, 1st and 2nd floor, and then group work, 3d floor or 1st floor for the (work)rooms …and then studying by myself I would go to either the 4th floor computer area or the 5th or 6th floor.” Students appear to make choices generally proscribed by time, priorities and their preferences for spaces based on what works for them. The correlation of type of space, type of activity and their way of learning enable them to be comfortable and open to learning. Referring to self-regulation, then, it appears that the environment may be key to encouraging and motivating students to keep on learning.

Conclusion

Students choose library spaces that support their learning preferences. They are aware of how the design of library spaces influences their choices. Analysis will continue in an effort to determine more precisely the relationships that exist in the TFDL between learning and space.

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